

Three new species of *Pluchea* Cass. (Asteraceae: Inuleae-Plucheinae) from northern Australia

A.R. Bean

Summary

Bean, A.R. (2013). Three new species of *Pluchea* Cass. (Asteraceae: Inuleae-Plucheinae) from northern Australia. *Austrobaileya* 9(1): 66–74. Three new species of *Pluchea* Cass. are described; *P. longiseta* A.R.Bean from northern Western Australia, *P. mesotes* A.R.Bean from the Northern Territory, and *P. alata* A.R.Bean from central Queensland. All species are illustrated and distribution maps are provided. A revised key to the Australian of *Pluchea* species is provided.

Key Words: Asteraceae, *Pluchea*, *Pluchea alata*, *Pluchea longiseta*, *Pluchea mesotes*, Australia flora, taxonomy, identification key

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Introduction

Pluchea Cass. was revised for Australia by Hunger (1997), with seven species. Bean (2011) named two additional species of *Pluchea* from Queensland. Further investigations have revealed three additional species, which are named here: *P. alata* is endemic to the Aramac area of central Queensland, *P. longiseta* occurs in coastal and near-coastal parts of north-western Western Australia, and *P. mesotes* occurs in coastal parts of north-eastern Northern Territory.

Materials and methods

This study is based on herbarium specimens from BRI, DNA, MEL and PERTH, and (for *P. alata*) field investigations. Measurements of florets were made from material preserved in spirit or reconstituted in boiling water, while leaves, bracts and achenes were measured from dried specimens.

Common abbreviations in the text include NT (Northern Territory), Qld (Queensland), SA (South Australia), WA (Western Australia).

Taxonomy

***Pluchea alata* A.R.Bean sp. nov.** affinis *P. rubelliflorae* (F.Muell.) B.L.Rob. sed capitulo cylindrico sessili vel subsessili, flosculis marginalibus prope horum apices expansis, setis pappi in flosculis disci paucioribus et alis caulis usque ad 1.2 mm latis differens. **Typus:** Queensland. MITCHELL DISTRICT: First Spring, Edgbaston Reserve, NE of Aramac, 6 April 2012, A.R. Bean 31641 (holo: BRI; iso: CANB, MEL).

Woody shrub to 70 cm high and 120 cm across. Stems erect to spreading, well-branched, glabrous throughout, conspicuously winged, wings 0.5–1.2 mm wide. Leaves sessile, elliptical, spreading, slightly fleshy, decurrent, 15–30 × 4.2–7 mm, 3.5–4.5 times longer than broad, eglandular, glabrous; margins denticulate; apex acute. Capitula cylindrical, 5–6.5 × 2.5–3 mm, in terminal clusters of 2–4; peduncles 0–1 mm long. Involucral bracts in several rows; outer bracts ovate, 1.2–2 × 0.4–0.6 mm, with apex acute, outer surface glabrous, margins entire, not ciliate and glabrous; median bracts lanceolate, 2–3.5 × 0.3–0.6 mm, apex acute, outer surface glabrous, margins glabrous; inner bracts linear, 3.7–4 × 0.8–0.9 mm, apex acute, outer surface glabrous, upper margins not ciliate, entire. Receptacle epaleate, verrucose, glabrous, flat, 1–1.2

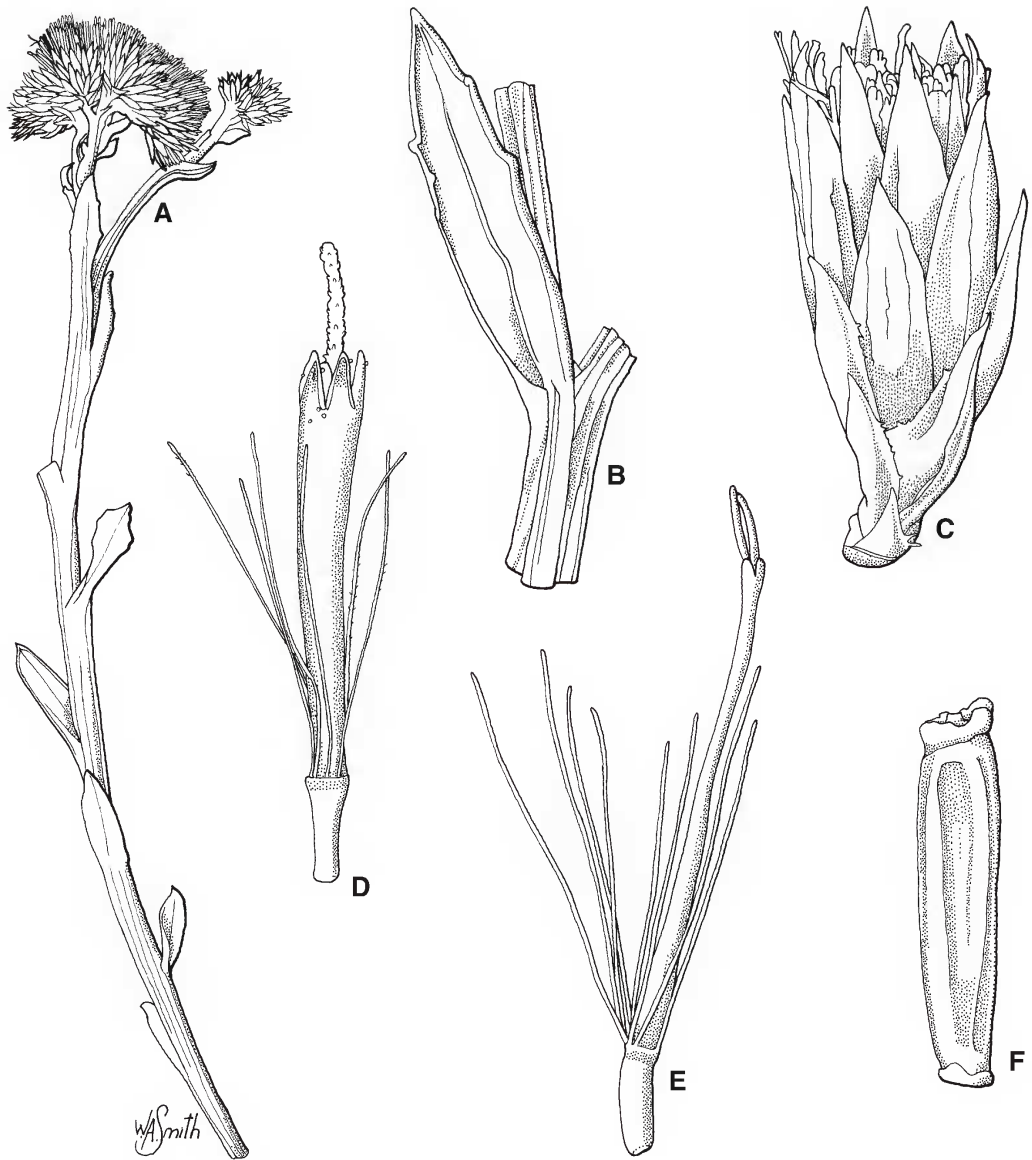


Fig. 1. *Pluchea alata*. A. flowering branchlet $\times 1.5$. B. leaf showing decurrent base and winged stem $\times 4$. C. flowering capitulum $\times 12$. D. disc floret $\times 16$. E. outer floret $\times 24$. F. achene $\times 48$. A & B from *Bean 31648* (BRI); C–E from *Bean 31641* (BRI); F from *Fairfax s.n.* (BRI [AQ875934]).

mm diameter. Outer florets 55–75, female; corolla filiform, but expanded (0.2–0.25 mm wide) towards apex, 2.8–3.1 mm long, white; lobes 3 or 4, equal, triangular, 0.15–0.25 mm long, glabrous; style bifid, exserted, glabrous; pappus corona present, erect, cylindrical, *c.* 0.03 mm long; pappus bristles 4–12, 2.4–2.8 mm long, caducous, in a single whorl, not coherent at base, all of similar length, barbellate throughout. Disc florets 5–13, ovary fully developed but infertile, pink; corolla cylindrical, 3–3.4 mm long, pink; lobes 5, triangular, 0.4–0.6 mm long, glabrous; anthers *c.* 1.5 mm long, including tail *c.* 0.15 mm long; style undivided, with obtuse sweeping hairs extending below the furcation. Achenes developing only from outer florets; narrowly-ellipsoidal, 0.7–0.85 mm long, brown, glabrous; surface obscurely longitudinally striate; carpopodium prominent, white. **Fig. 1.**

Additional specimens examined: Queensland. MITCHELL DISTRICT: Bowen Downs, in 1874, *Birch s.n.* (MEL); Big Spring, Edgbaston Station, N of Aramac, Apr 2005, *Fairfax s.n.* (BRI [AQ875934]); Edgbaston, NE of Aramac, Sep 2006, *Fensham 5549* (BRI); Edgbaston Station 33 km NNE of Aramac, Apr 2010, *Thompson MUT410 et al.* (BRI, PE); Measuring Spring, Edgbaston Reserve, NE of Aramac, Apr 2012, *Bean 31648* (BRI, NSW, US).

Distribution and habitat: *Pluchea alata* is endemic to Queensland and is known from Edgbaston Reserve, NE of Aramac, and an old record from nearby Bowen Downs station (**Map 1**). It inhabits the margins of artesian springs, on saline soils.

Phenology: Flowers and fruits have been recorded for April and September.

Affinities: This species is allied to *Pluchea rubelliflora*, but differs by the woody stems, the relatively broader leaves (length 3.5–4.7 times width versus 4.5–12 times for *P. rubelliflora*), the more or less cylindrical capitula that are sessile or with peduncles up to 1 mm long (hemispherical capitula on peduncles (1–)2–10 mm long for *P. rubelliflora*); the outer florets expanded towards apex, with the lobes 0.15–0.25 mm long (florets not expanded and with lobes 0.08–0.12 mm long for *P. rubelliflora*); and the disc florets with 3–6 pappus bristles (6–18 bristles for *P. rubelliflora*). The stem

wings are up to 1.2 mm wide, whereas for *P. rubelliflora* in the Aramac – Barcaldine area, the stem wings are 0.2–0.4 mm wide.

Note: ‘Bowen Downs’ was a much larger station when this species was collected there in 1874. In view of the habitat occupied by this species, Birch’s collecting locality was most likely in the Lake Huffer area (R. Fensham, *pers. comm.* Feb 2013).

Conservation status: The species is known from fewer than 100 plants at the type locality. Applying the Red List criteria (IUCN 2012), a category of **Endangered** is recommended (Criterion D).

Etymology: The epithet is from the Latin *alatus* meaning winged, in reference to the prominently winged stems of this species.

Pluchea longiseta A.R.Bean **sp. nov.** ab omnibus aliis speciebus *Pluchee* foliis carnis, flosculis achenisque longioribus et pappi setis in verticillis duobus tribusve dispositis differens. **Typus:** Western Australia. North shore of Willie Creek inlet, Dampierland Peninsula, 6 September 1985, *K.F. Kenneally 9526A* (holo: BRI; iso: CANB, DNA, PERTH).

Pluchea sp. A; Wilson (1992: 950).

Pluchea sp. B; Wilson (1992: 950).

Pluchea sp. B Kimberley Flora (K.F. Kenneally 9526A); Western Australian Herbarium (1998–).

Woody shrub to 60 cm high and 80 cm across. Stems terete, erect to spreading, well-branched, glabrous or with very sparse multicellular eglandular hairs near growing point. Leaves sessile, narrowly-oblongate to linear, spreading, fleshy, not decurrent, 28–52 × 2–5.5 mm, 9–14 times longer than broad, eglandular, multicellular hairs sparse or absent; margins entire; apex acuminate or apiculate. Capitula in small terminal clusters, narrowly campanulate to cylindrical, 12–15 × 8–12 mm; peduncles 2–27 mm long, with 1–3 lanceolate bracts near the apex, each 2–4 mm long. Involucral bracts in several rows; outer bracts ovate, 2.5–5.5 × 1.5–3 mm, apex acuminate, outer surface glabrous, margins

entire and ciliate; median bracts lanceolate, $6.5\text{--}9.5 \times 2.3\text{--}3$ mm, apex acute to acuminate, outer surface glabrous, margins glabrous or with sparse eglandular hairs; inner bracts linear, $10.5\text{--}12 \times 0.7\text{--}1.1$ mm, apex lacinate, outer surface glabrous, upper margins glabrous, not ciliate. Receptacle epaleate, verrucose, glabrous, flat to concave, 1.7–2 mm diameter. Outer florets 100–200, female; corolla filiform, 8–9.5 mm long, pink; lobes 3, equal, triangular, 0.2–0.3 mm long, glabrous; style bifid, exserted, glabrous; pappus 8.2–9.2 mm long, pappus bristles 25–40, in 2 or 3 whorls, coherent at base, all of similar length. Disc florets 12–22, ovary fully developed but infertile, pale yellow; corolla cylindrical, 7.9–9.3 mm long, pink; lobes 4(–5), triangular, 0.5–0.6 mm long, glandular; anthers *c.* 3 mm long, including tail *c.* 0.2 mm long; style bifid, with obtuse sweeping hairs extending below the furcation. Achenes narrowly-ellipsoidal, 1.3–1.5 mm long, brown, with numerous appressed twin hairs; longitudinal ribs 4–6; carpododium prominent, white. **Fig. 2.**

Additional specimens examined: Western Australia. Montgomery Island, E of Koolan Island, May 1998, *Mitchell 5381* (DNA, PERTH); Cygnet Bay, Nov 1906, *Fitzgerald 1706* (PERTH); Buckley Plain, north of town boundary, Broome, Feb 2005, *Byrne 1374* (PERTH); Buckley Plain, 6 km NE of Broome, Nov 1987, *Foulkes 442* (DNA); *c.* 9 km NE of Mandora Homestead, between Broome and Port Hedland, Aug 1997, *Mitchell PRP1787* (PERTH); Loam 2 site, Mandora Marsh area, Oct 1999, *Duero WEL2-10 et al.* (DNA, PERTH); NW Island, Montebello Islands, Oct 2000, *Kenneally 11545* (PERTH); Hermite Island, Montebello Islands, Oct 2000, *Kenneally 11573* (PERTH); below tip at side of DSI lease, Dampier Island, Sep 1987, *Glennon 397K* (PERTH); Boodie Island, S of Barrow and Middle Islands, Sep 2004, *Long VL360-3* (PERTH); Duffers Bore, 24 km N of Dampier Downs, Aug 1976, *Kenneally 5782* (DNA, PERTH); between T-bone Bay and hill towards lighthouse, Oct 1975, *Weber 4949* (PERTH); Willie Creek marsh, Jan 1985, *Foulkes 97* (PERTH); just N of Dragon Tree Soak, Great Sandy Desert, Aug 1977, *George 14747* (BRI, PERTH); 80 Mile Beach, N of Wooroo Creek, Jul 1941, *Burbidge 1300* (PERTH).

Distribution and habitat: This species is endemic to Western Australia, mainly in coastal areas from the Montgomery Islands in the western Kimberley region, to the Cape Range, but also in a few scattered places away from the coast (**Map 1**). It inhabits samphire communities behind frontal dunes,

saline marshy plains, and the margins of salty lagoons. Soils are usually pale and clayey but can have a sandy surface layer.

Phenology: Flowers and fruits are recorded from May to February, with most collections made in September and October.

Affinities: Because of the relatively large floral parts and the broad involucre bracts, this species resembles members of the genus *Streptoglossa* Steetz, and some specimens have previously been identified as such. But *Streptoglossa* species have ligulate outer florets and achenes with very dense twin hairs that conceal the surface. *Pluchea longiseta* has the tubular outer florets and almost glabrous achenes that are typical of this genus.

Pluchea longiseta does differ from the usual characteristics of *Pluchea* in that the pappus bristles are arranged in two or three whorls. *Pluchea* usually has pappus bristles in a single whorl. *P. longiseta* can be distinguished from other Australian species of *Pluchea* also by the fleshy leaves, and the longer achenes, pappus and florets.

Conservation status: This species is relatively widespread, but no surveys have been carried out to determine population sizes. Its habitat is potentially under threat from port development and infrastructure in some areas. A category of **Data Deficient** is appropriate under the IUCN guidelines (IUCN 2012).

Etymology: The epithet *longiseta* refers to the pappus bristles that are longer in this species than in any other Australian *Pluchea*.

Note: According to Western Australian Herbarium (1998–), the taxon “*Pluchea* sp. A” listed in Wilson (1992) is synonymous with “*Pluchea* sp. B”.



Fig. 2. *Pluchea longiseta*. A. flowering branchlet $\times 1$. B. flowering capitulum $\times 4$. C. disc floret $\times 8$. D. outer floret $\times 8$. E. achene $\times 32$. A from Byrne 1374 (PERTH); B–D from Kenneally 9526A (PERTH); F from Kenneally 11573 (PERTH).

Pluchea mesotes A.R.Bean **sp. nov.** affinis *P. indicae* (L.) Less. sed foliis angustioribus dentibus marginalibus paucis vel nullis, pedunculis capitulisque longioribus et pappi setis in quoque flosculo paucioribus differens. **Typus:** Northern Territory. Connexion Island, off Groote Eylandt, 29 September 1988, *P.K. Latz 10901* (holo: BRI; iso: DNA).

Multi-stemmed annual shrub to 100 cm high. Stems terete, erect to spreading, well-branched, with sparse to moderately dense multicellular eglandular hairs. Leaves sessile, narrowly-elliptical to spatulate, spreading, chartaceous, not resinous, glands absent or sparse, multicellular eglandular hairs sparse, bases not decurrent, $24\text{--}55 \times 4\text{--}16$ mm, $3.4\text{--}6.2$ times longer than broad, margins entire or occasionally with 1–3 pairs of teeth, apex acute. Capitula in small terminal clusters, narrowly campanulate, $5.5\text{--}7 \times 5\text{--}5.5$ mm; peduncles 0–7 mm long, with 1–3 lanceolate bracts near the apex, each 1–2.5 mm long. Involucral bracts in several rows; outer bracts broadly ovate, $1.6\text{--}2.7 \times 1\text{--}1.4$ mm, with apex acute, outer surface glabrous, upper margins ciliate; median bracts lanceolate, $3.2\text{--}3.8 \times 0.8\text{--}1$ mm, apex acute, outer surface glabrous, upper margins ciliate; inner bracts linear, $4.8\text{--}5.2 \times 0.2\text{--}0.3$ mm, upper margins ciliate (cilia 0.05–0.1 mm long), outer surface glabrous. Receptacle epaleate, verrucose, densely hairy, flat, 1.4–1.7 mm diameter. Outer florets 60–120, female; corolla filiform, 4–4.5 mm long, colour unknown; lobes 3, equal, triangular, 0.1–0.15 mm long, glabrous; style bifid, exserted, glabrous; pappus 3.8–4.1 mm long, pappus bristles 12–15, in a single whorl, coherent at base, all of similar length; Disc florets 2–5, ovary fully developed but infertile; corolla cylindrical, 4–4.3 mm long, white to pale yellow; lobes 5, triangular, 0.4–0.7 mm long, glandular; anthers c. 1.9 mm long, including tail c. 0.3 mm long; style bifid, with obtuse sweeping hairs extending below the furcation. Achenes narrowly-ellipsoidal, 0.9–1 mm long, brown, with scattered appressed twin hairs; longitudinal ribs 2–5; carpododium prominent, white. **Fig. 3.**

Additional specimens examined: Northern Territory. Bennett Bay, Eastern Arnhem Land, Nov 1987, *Russell-Smith 4219 & Lucas* (BRI, DNA); Roper River, Sep 1867, *Gulliver s.n.* (MEL).

Distribution and habitat: This species is apparently confined to the coastal parts of north-eastern Northern Territory (**Map 1**). It is recorded from “dune thicket”, and from “coral-shell gravel above mangroves”.

Phenology: Flowers and fruits have been recorded for September and November.

Affinities: *Pluchea mesotes* is related to *P. indica* but differs by the leaves 3.4–6.2 times longer than broad, that are without teeth or sometimes with a few small teeth (leaves 1.7–3.3 times longer than broad and with numerous prominent teeth for *P. indica*); the peduncles 0–7 mm long (versus 0–1 mm long for *P. indica*); the longer capitula 5.5–7 mm long (versus 4–5.5 mm for *P. indica*); the cilia on the upper margins of the inner involucral bracts 0.05–0.1 mm long (versus 0.2–0.3 mm long for *P. indica*); and the 12–15 pappus bristles (versus 17–25 for *P. indica*). *P. indica* occurs in the Darwin – Kakadu area, and on Cape York Peninsula, but apparently not in the region occupied by *P. mesotes*.

Conservation status: A category of **Data Deficient** is appropriate under the IUCN guidelines (IUCN 2012).

Etymology: From the Greek *mesotes*, meaning ‘in the middle position’. This is reference to the geographical position of this species in Australia compared with *P. indica*. The epithet is treated as a noun in apposition.

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Key to the *Pluchea* species in Australia

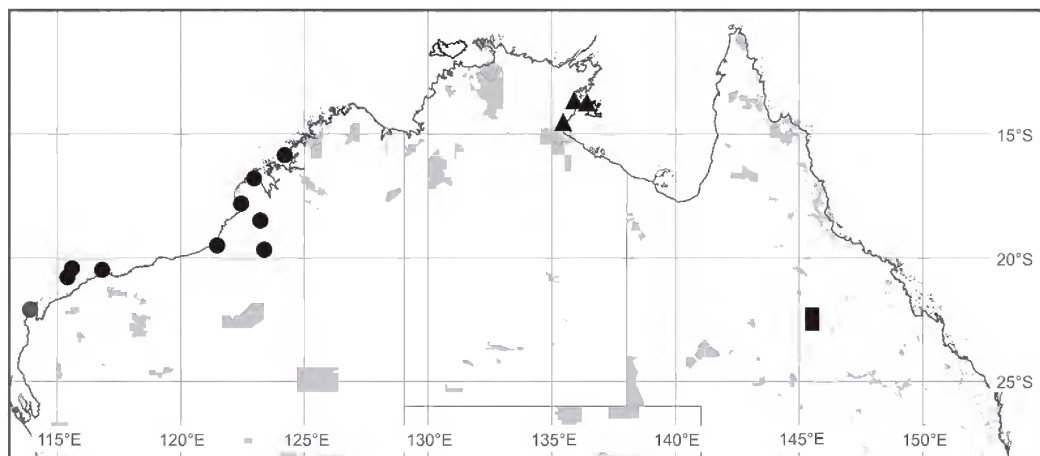
- 1 Leaves and stems glabrous (disregarding sessile glands) or with very few scattered hairs 2
1. Leaves and stems with frequent to abundant eglandular hairs or stalked glandular hairs 8
- 2 Pappus bristles 8.2–9.2 mm long, in 2 or 3 whorls; leaves fleshy *WA* **P. longiseta**
2. Pappus bristles 1.8–5 mm long, in a single whorl; leaves not fleshy 3
- 3 Leaves narrow, 4.5–23 times longer than wide 4
3. Leaves broad, 1.5–4.7 times longer than wide 6
- 4 Leaves with dark punctate glands; stems not winged 5
4. Leaves without punctate glands; stems narrowly winged *NT, Qld, SA, WA* . . **P. rubelliflora**
- 5 Capitula 6–7 mm long; disc florets 5-lobed; leaves 7–24 mm long; margins of involucre bracts fimbriate, eglandular *NSW, Qld* **P. baccharoides**
5. Capitula 7–10 mm long; disc florets 4-lobed; leaves 18–54 mm long; margins of involucre bracts with stalked glands *Qld* **P. punctata**
- 6 Stems winged; leaf glands absent *Qld* **P. alata**
6. Stems not winged; leaf glands present 7
- 7 Leaves not resinous; capitula 4–5.5 mm long, clustered into sessile groups of (1–)2–4 *NT, Qld* **P. indica**
7. Leaves resinous; capitula 6–8.5 mm long, usually solitary; some peduncles on any given plant more than 3 mm long *WA* **P. tetranthera**
- 8 Hairs on leaves extremely dense, obscuring leaf surfaces *NT, Qld, WA* **P. ferdinandi-muelleri**
8. Leaf surfaces readily visible 9
- 9 Hairs on leaves and stems predominantly gland tipped *NSW, NT, Qld, SA, WA* . . **P. dentex**
9. Hairs on leaves and stems all or mostly eglandular 10
- 10 Leaves narrowly-elliptic or oblanceolate, 3.4–6.4 times longer than wide. 11
10. Leaves obovate, 1.5–3.3 times longer than wide 12
- 11 Leaf margins denticulate throughout; leaf surfaces with abundant, yellow glands; receptacle glabrous *Qld* **P. xanthina**
11. Leaf margins entire or with 1 or 2 pairs of teeth; leaf surface glands absent or sparse, not yellow; receptacle hairy *NT* **P. mesotes**
- 12 Capitula 5.5–7.5 mm long, not clustered, at least some peduncles more than 2 mm long; leaves often resinous *NSW, NT, Qld, SA* **P. dunlopia**
12. Capitula 4–5.5 mm long, clustered into sessile groups of (1–)2–4; leaves not resinous *NT, Qld* **P. indica**



Fig. 3. *Pluchea mesotes*. A. flowering branchlet $\times 0.5$. B. leaf $\times 2$. C. flowering capitulum $\times 6$. D. disc floret $\times 16$. E. achene $\times 32$. A, C–E from Latz 10901 (BRI); B from Russell-Smith 4219 & Lucas (DNA).

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Map 1. Distribution of *Pluchea longiseta* ●, *P. mesotes* ▲ and *P. alata* ■.